United States Steel Corporation
Purple Loosestrife Management Program

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I. BACKGROUND

- March 1999 Natural Resource Damage (NRD) Consent Decree for Grand Calumet River – United States/State of Indiana/USX Corporation
- Portion of Consent Decree required USS to develop ecological restoration plan for three sites: Lakeshore Properties, Salt Creek Property and Grand Calumet River
- Ecological Restoration Plan includes:
  - Chemical/mechanical control of purple loosestrife at the Lakeshore Properties located in the N.E. corner of Lake County
  - Biocontrol plan for purple loosestrife along the Grand Calumet River in Gary, Lake County, IN

II. Chemical/Physical Control Lakeshore Properties

- Two sites – City of Gary site (50.7 acres) and Gary School site (81.3 acres)
- Baseline conditions were documented at both parcels in 1998 to set restoration goals.
- Ecological Restoration Methods developed to restore natural character of site that includes:
  - Control of invasive exotic plants
  - Habitat enhancement for endangered-threatened-rare species
  - Planting of native plants in highly disturbed areas
  - Periodic vegetation monitoring

II. Chemical/Physical Control Lakeshore Properties Continued...

- Chemical control – 2% solution of Glyphosate-based herbicide – Round Up
  - First year of control was aggressive – large, dense stands of PLS broadcast sprayed; smaller, sparse stands of PLS – plants treated individually by hand-wicking
  - Hand-wicking – spray herbicide onto hand (covered by a rubber glove under a cotton glove) and move up the stalk of the individual plant simultaneously
  - Second year of treatment – goal was not to allow PLS to seed; therefore, no reproduction; cut off flowering stalks and hand-wicked these plants using Round Up
  - Using these methods has resulted in significant decrease of PLS at both sites

III. Biocontrol of Purple Loosestrife

- Release of phytophagous PL insects at four release sites
  - Two release sites along riverbanks of “Bonji Tract” owned by DNR
  - Two additional release sites along Grand Calumet River just upstream of Bonji Tract

III. Biocontrol of Purple Loosestrife Continued...

- Only two phytophagous insects approved by USDA for control of PL in the United States are commercially available

  - *Galerucella calmariensis* and *Hylobius transversovittatus* – combination of both species will be released to ensure effective control of PL once the insect populations are established

- Visible results of PL population decline five to ten years after release of prescribed densities

III. Biocontrol of Purple Loosestrife Continued...

- Monitoring for success of PL biocontrol efforts

  - Monitoring program will extend for five years

  - Randomly placed transects located within each insect release area; each with a predetermined number of permanent one square meter quadrats

  - Vegetation measurements prior to release of insects

  - Monitoring protocol – **www.invasiveplants.net**

III. Biocontrol of Purple Loosestrife Continued...

- Assessment of insects and plants will occur twice during a growing season, spring and summer, as per procedures established by Blossey (2003)
- Spring assessment – allows for estimation of adult populations for all species on shoot tips; estimate % cover and stem counts for each life stage (egg, larvae, adult) and each species of insect
- Summer assessment – measure reproductive efforts by PL, e.g. height, total number of inflorescence on stem, total length of longest inflorescence, number of flower buds per five cm on stem, and count of all inflorescence in a sample quadrat

III. Biocontrol of Purple Loosestrife Continued...

- Purpose of project to establish biocontrol insects on Grand Calumet River that can spread to other populations of PL in the region

- Expect a general trend over five-year monitoring period of decreasing % cover and increasing % defoliation of PL – can take over five years to be visibly apparent

- Release will be considered successful if biocontrol insects are established at each release site at the end of five years

III. Biocontrol of Purple Loosestrife Continued...

- USS and JFNew, consultant for the biocontrol project, working with a 4-H group and Charter School of the Dunes to rear *Galerucella* beetles this month (April 2004) for a May-June release at the four sites

- *Hylobius* beetles will be purchased from Cornell University